

## Supplemental Digital Content 1: Patient Cases

Patient	Age (years) & Sex	Diagnosis	Planned Procedure	Complication and Code Details	Treatment	Surgery Outcome	Length of Hospital Stay (days)	Long term Outcome
1	3.5 Male	Sagittal Synostosis	TCVR	Bleeding and coagulopathy. Sigmoid sinus breached; 3 blood units lost.	7 units of packed red blood cells administered. CT scan done postop – normal.	Completed	4	No issues
2	1.5 Male	Clover Leaf Skull	BFOA	Laryngospasm, venous air embolism, cardiac arrest.	Difficulty ventilating, tracheostomy considered but not required. Ventricular fibrillation arrest required 2 rounds of cardioversion	Completed	9	Deceased 6 years post op, cardiac-related
3	5.1 Male	Sagittal Synostosis	Planned TCVR; only PCVR performed, ACVR deferred.	Acute intracranial hypertension	Large aberrant venous channels encountered posteriorly; the brain was noted to be tense. neurosurgery advised that proceeding with ACVR would increase venous intracranial hypertension.	Curtailed	5	Underwent successful ACVR 6 months postop
4	1.0 Male	Sagittal Synostosis	TCVR	Airway issue with mucous plug	Mucous plug in naso-tracheal tube in prone position and unable to ventilate. Burr holes sealed with wax, skin closed.	Curtailed	1	TCVR successfully completed 5 months postop
5	0.5 Male	Sagittal Synostosis	ESC	VAE	During last barrel stave between coronal and lambdoid sutures; desaturation and reduced HR. Wound irrigated Incision closed. Aggressive fluid resuscitation and chest compressions to break up air embolus; blood transfusion. Area packed with floseal & gelfoam.	Completed	1	No issues
6	0.5 Male	Sagittal Synostosis	ESC	Intra-op Heart Block	Difficulty ventilating, patient desaturating to	Completed	4	No issues

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					68%. Surgery curtailed, patient transferred to ICU.			
7	0.5 Male	Sagittal Synostosis	ESC	Decreased Cardiac Output	Patient Desaturated and became tachycardic – infundibular spasm increasing right to left shunt and causing desaturation. Background of Tetralogy of Fallot. Anaesthetics felt it was unsafe to proceed.	Curtailed	3	No issues
8	0.9 Male	Metopic Synostosis	ACVR/FOA	Cardiac Arrest due to cardioplegia	Overly rapid infusion of blood through central line resulting in K+ induced cardiac arrest.	Completed	5	No Issues
9	21 Female	Fibrous Dysplasia	Decompression Right Optic Nerve	Venous air embolism	Sudden onset of hypotension during burring bone in orbital apex. Compressions and resuscitation successful.	Curtailed	1	No issues
10	0.6 Male	Sagittal Synostosis	TDVR	Cardiac arrest secondary to hypovolaemia	Volume replacement. Surgery curtailed.	Curtailed	6	No Issues
11	17 Female	Class II Malocclusion/ JIA	Le Fort1 / BSSO	Cardiac Arrest due to trigeminocardiac reflex	Asystole during Le Fort I down-fracture.	Completed	4	No Issues
12	18 Female	Class II Malocclusion/JIA	Le Fort1 / BSSO	Cardiac Arrest due to trigeminocardiac reflex	Asystole during manipulation of osteotomized mandible into dental splint	Completed	14	No Issues
13	0.7 Male	Sagittal Synostosis & Left Unicoronal synostosis	TCVR	Cardiac Arrest Due to Hypovolemia	Bleeding during posterior vault dissection of dura and bone. Severe hypotension and cardiac arrest required compressions and defibrillation	Curtailed	4	Seizures secondary to venous cerebral infarct
14	1.8 Male	Metopic Synostosis	ACVR/FOA	Venous air embolism	Sudden hypotension during scalp closure. Chest compressions & turned onto left side.	Completed	4	No Issues

TCVR = Total Cranial Vault Reshaping

ACVR = Anterior Cranial Vault Reshaping

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FOA = Fronto-Orbital Advancement

BSSO = Bilateral Sagittal Split Osteotomy

JIA = Juvenile Idiopathic Arthritis

ESC = Endoscopic Strip Craniectomy